

I CLAIM:

1. An apparatus for transmitting and receiving digital image data over a computer network, said apparatus comprising:  
signal recognition means for determining transmission status information;

image data buffer means connected to said recognition means;

attachment means coupled to said image data buffer means for attaching image data to any MIME enabled electronic mail format data;

a MIME compliant electronic mail agent connected to said attachment means;

user identification means coupled to said MIME compliant electronic mail agent;

electronic management means for controlling the operation of said apparatus; and

output means connected to said electronic management means for displaying said digital image means.

2. An apparatus according to claim 1 further including encryption means connected to said conversion means and said electronic mail agent for selectively encoding/decoding said converted electronic mail data.

3. An apparatus according to claim 2 further including a public/private two key encryption/decryption means together with

means for accessing and retrieving a public key from a private address book.

4. An apparatus according to claim 1 wherein said electronic mail agent is a commercial mail agent and said mail server resident on the internet global area networks is a commercial server for said agent.

5. An apparatus according to claim 1 wherein said electronic mail agent is a public mail agent and said mail server resident on the internet global area network is a public server.

6. An apparatus according to claim 1 wherein said output means includes store/dial/connect circuitry to operatively connect the apparatus via said mail server resident on the internet global area network to a remote mail agent connected via a remote mail server to said Internet Global Area Network.

7. An apparatus according to claim 6 wherein said electronic management means includes a keypad input device having at least send/receive functions; fax and e-mail address functions; and mail server, private address book, and fax machine query functions for commanding operation of said apparatus.

8. An apparatus according to claim 7 further including an RJ 11 input terminal connected to said signal recognition means for operatively connecting said apparatus to a class 1, 2, or 3 facsimile machine standard output terminal.

9. An apparatus according to claim 8 further including an RJ 11 output terminal connected to said output means for operatively connecting said apparatus via a POTS line to said mail server resident on the internet global area networks.

10. An apparatus according to claim 9 wherein said apparatus is powered by a separate DC voltage power supply operatively connected thereto and adapted to be connected to a standard commercial AC power source.

11. An apparatus according to claim 1 wherein said conversion means includes electronic means for attaching/detaching native facsimile images to the electronic mail format data created by said conversion means for transmission/reception over the internet global area networks.

12. An apparatus according to claim 11 wherein said electronic means includes e-mail extender MIME protocol.

13. An apparatus system for transmitting facsimile images from a first, class 1, 2, or 3 fax machine across the internet global area networks to a second, class 1, 2, or 3 fax machine which comprises in combination:

a first device connected between a first fax machine and a local mail server resident on the Internet global area networks comprising:

signal recognition means connected to said first fax machine for determining send/receive status information;



an MIME compliant electronic mail agent connected to said conversion means;

user identification means for store/send/receive functions connected to said electronic mail agent;

electronic management means for address/send/receive instruction, control, and status of apparatus connected to said user identification means; and

output means connected to said electronic management means for storing/dialing/connecting said second device to said remote mail server resident on the internet global area networks;

whereby input to said first fax machine can be transmitted to said second fax machine over the internet global area networks and input to said second fax machine can be transmitted to said first fax machine over the internet global area networks.

14. An apparatus system according to claim 13 further including encryption/decryption means connected to said conversion means and said electronic mail agents of each of said first and second devices for selectively encoding/decoding said converted electronic mail format data.

15. An apparatus system according to claim 14 further including a public/private two key encryption/decryption means together with means for accessing and retrieving a public key from a private address book.



a plurality of digital signal processors for formatting said MIME e-mail data streams;

at least one EPROM containing a commercial, private, and/or public e-mail agent;

a universal asynchronous transmitter/receiver keypad for addressing, encoding and operating data input and a display module for displaying status;

an ASIC chip programmed with translation algorithms for converting phase C11 data into commercial and or public e-mail format, both forward and reverse directions;

at least one AD/DA converter;

a transmitting modem and a receiving modem;

a line tone/ring generator; and

a CPU controlling and directing the flow and processing of data within the system.

20. A system according to claim 19 further including a flash EPROM containing signature and encryption/decryption, two key algorithms for the coding/decoding of facsimile to facsimile, e-mail to facsimile, and facsimile to e-mail data streams.

21. A system according to claim 20 wherein said EPROM contains a public key query instruction set.

22. Apparatus for transmitting/receiving encrypted class 1, 2, or 3 facsimile images over telephone lines from a local fax machine to a selected remote fax machine which comprises:





means for accessing a public key address book connected to said remote buffer;

electronic management means for address/send/receive instruction, control, and status of apparatus connected to said remote fax machine for controlling the reception, verification, decoding, and print out of the fax image data received.

23. The method of transmitting/receiving class 1, 2, or 3 fax machine image data over non-fax image data compatible networks from a local fax machine to a selected remote fax machine and vice versa which comprises:

storing the image data stream from a local transmitting class 1, 2, or 3 fax machine in a local store and forward buffer;

converting the image data stream in said buffer to a MIME compliant data format compatible with the network over which the fax data is to be sent;

connecting a local mail agent directly to said store and forward buffer and to a server for said agent resident on the network over which the fax is to be sent;

connecting a store and forward buffer to said selected remote fax machine;

connecting a remote mail agent to said remote buffer and a remote mail agent server resident on the network over which the fax is to be sent;

sending said converted image data stream over said non-fax image data compatible network together with address and user identification information to said selected remote mail server resident at a remote location on said network serving said selected remote mail agent;

receiving and storing said data stream in said remote store and forward buffer, connected to said selected remote fax machine;

reconverting said received and stored non-fax image data stream into class 1, 2, or 3 fax machine image data;

printing out said reconverted image data on said selected remote class 1, 2, or 3 fax machine.

24. The method as claimed in claim 23 further including querying said remote mail server for the presence of stored mail data; and

printing out on said remote fax machine said reconverted image data for the mail data selected from that stored in said remote mail server.

25. The method as claimed in claim 23 further including converting the image data stream in said local buffer to commercial compatible data format; and

connecting a commercial mail agent to said buffer directly and to a commercial mail server resident on the network over which the fax is to be sent.

26. The method as claimed in claim 23 further including converting the image data stream from a local transmitting class 1, 2, or 3 fax machine to an e-mail data stream format;

connecting said local mail agent to an e-mail server resident on the internet global area networks; and

sending said converted e-mail data stream to said selected remote fax machine buffer over the Internet Global Area Network.

27. The method as claimed in claim 23 further including converting the fax image data stream from a local transmitting class 1, 2, and 3 fax machine to a private data stream format;

connecting said local mail agent to a private server resident on the internet global area networks; and

sending said converted private data stream to said selected remote fax machine buffer over the internet global area networks.

28. The method as claimed in claim 23 further including converting the image data stream in said buffer to commercial and public compatible data format;

connecting said buffer to a selected commercial or public mail agent and corresponding mail server resident on the internet global area networks;

sending said converted image data stream over the Internet global area networks to a remote mail server and mail agent

corresponding in kind to the selected commercial or public mail agent and server at the sending fax machine; and

connecting said selected remote commercial or public mail agent to said store and forward buffer connected to said selected remote fax machine.

29. The method as claimed in claim 23 further including encrypting the converted image data stream;

sending said encrypted converted data stream to said selected remote mail server agent; and

decrypting said received and stored data stream in said remote buffer before reconverting said data stream to fax image data.

30. In a system for transmitting/receiving class 1, 2, or 3 fax machine data over non-fax image data compatible networks connecting a local fax machine to a selected remote fax machine having fax image processing apparatus connected at the local and remote fax machines comprising;

signal recognition means for determining send/receive status information;

an image data compression, store and forward buffer means connected to said recognition means;

attachment means for attaching standard fax images to any MIME enabled electronic mail data format and vice versa connected to said buffer means;

an electronic mail agent connected to said conversion means;

encryption means connected to said conversion means and said electronic mail agent for selectively encoding/decoding said converted electronic mail data and having a public/private two key encryption/decryption means together with means for accessing and retrieving a public key from a private address book;

user identification means for store/send/receive functions connected to said electronic mail agent;

electronic management means for address/send/receive instruction, control, and status of apparatus connected to said user identification means; and

output means connected to said electronic management means for storing/dialing/connecting said apparatus to a mail server resident on a global area network:

the method of sending encrypted fax image data from a local to a remote fax machine which comprises:

bypassing at both the local and remote locations all the fax image data processing apparatus except the encryption/decryption, signal recognition, buffer, electronic management and output means apparatus; and

connecting said local fax machine and said selected remote fax image data processing apparatus together over a POTS line.

31. The method of receiving electronic mail on class 1, 2, and 3, fax machines which comprises the steps of:

connecting a store and forward buffer to a class 1, 2, or 3 fax machine;

connecting said store and forward buffer to a local electronic mail agent and then to a mail server for said local mail agent resident on an e-mail network;

receiving and storing an e-mail message data stream from said local mail agent in said store and forward buffer;

converting said received and stored e-mail data stream said class 1, 2, or 3 fax machine image data stream;

printing out said reconverted image data stream on said class 1, 2, and 3 fax machine.

32. An apparatus as claimed in claim 1 wherein said electronic management means includes an electronic keyboard having at least the following operating keys:

a QWERTY keyboard;

a 1 through 0 keyboard;

domain keys COM, NET, EDU, ORG, GOV, and MIL:

function keys SEND MAIL, GET MAIL, PREVIEW MAIL, DELETE MAIL, PRIVATE, and PRINT:

addressing keys @, DOT;

each of said keys causing upon actuation all the necessary electronic operations for accomplishing the indicated command within the apparatus.

33. An apparatus according to claim 3 wherein said encryption/decryption means includes an attachment MIME/MOSS extender.

34. An apparatus according to claim 13 wherein said electronic management means for said first and second devices operates in accordance with TCP/IP protocols.

35. An apparatus for receiving facsimile data from a Class 1, 2 or 3 facsimile machine and packaging said facsimile data for delivery to an intended recipient over a computer network, said apparatus comprising:

a self contained facsimile data receiver which generates a dial tone for said facsimile machine, wherein said facsimile data receiver is adapted to be connected to said facsimile machine and receives from said facsimile machine said facsimile data and the telephone number of said intended recipient of said facsimile data;

a delivery address device coupled to said facsimile data receiver for deriving delivery address information from said telephone number;

an image data restore device coupled to said facsimile data receiver for restoring said facsimile data to native facsimile image data;

an electronic mail agent coupled to said delivery address device and to said image data restore device for converting said delivery address information and said native facsimile image data to an electronic mail compatible format; and

a transmission device coupled to said electronic mail agent for transmitting an electronic mail message carrying said native facsimile image data to said computer network for delivery to the intended recipient.

36. The apparatus of claim 35 further including a data security encoding device coupled to said image data restore device for encoding said native facsimile image data in accordance with an encoding code.

37. The apparatus of claim 35 further including an encryption device coupled to said image data restore device for encoding said native facsimile image data in accordance with an encryption code.

38. The apparatus of claim 35 wherein said electronic mail agent converts said delivery address information and said native facsimile image data to a MIME compatible electronic mail format.

39. The apparatus of claim 35 wherein said electronic mail agent converts said delivery address information and said native facsimile image data to a MOSS compatible electronic mail format.

40. The apparatus of claim 35 further including a compression device coupled to said image data restore for compressing said native facsimile image data.



41. The apparatus of claim 40, wherein said data compression device compresses said native facsimile image data without loss of data content.

42. The apparatus of claim 41, wherein said data compression device compresses said facsimile data in accordance with a format selected from among the group consisting of JPEG, GIF, TIFF, MPEG and their extensions.

43. The apparatus of claim 35, wherein said electronic mail agent includes password means for providing a password for said computer network.

44. The apparatus of claim 35, wherein said electronic mail agent includes user ID means for providing a user ID for said computer network.

45. The apparatus of claim 35, wherein said facsimile data receiver includes a telephone connection device for establishing a telephone connection with said facsimile machine.

46. The apparatus of claim 35, wherein said transmission device includes a telephone connection device for establishing a telephone connection with said computer network.

47. The apparatus of claim 35 further including a receiving device coupled to said electronic mail agent for receiving an electronic mail message carrying native facsimile image data from said computer network.

48. The apparatus of claim 47, wherein said compression device compresses said native facsimile image data received from said computer network in a format compatible with a class 1, 2 or 3 facsimile machine.

49. The apparatus of claim 48, wherein said apparatus further includes a facsimile data transmitter adapted for coupling to said facsimile machine to transmit said facsimile image data to said fax machine.

50. The apparatus of claim 47 wherein said electronic mail agent includes means for converting said received native facsimile image data to a displayable form for display on an output device.

51. The apparatus of claim 50 wherein said output device is the print mechanism of a facsimile machine.

52. The apparatus of claim 50 wherein said output device is a remotely located printer.

53. The apparatus of claim 50 wherein said output device is a computer display screen.

54. An apparatus for receiving electronic mail from a computer network on a Class 1, 2 or 3 facsimile machine, said apparatus comprising:

a network connection device for establishing a connection with said computer network;

a receiving device coupled to said connection device for receiving said electronic mail message from said computer network;

an electronic mail agent coupled to said receiving device, said electronic mail agent includes a converting device for converting said electronic mail message received by said receiving device to facsimile data compatible for reception by said facsimile machine; and

a self contained facsimile data transmitter which generates a dial tone for said facsimile machine, wherein said facsimile data transmitter is adapted to be connected to said facsimile machine for transmitting said converted electronic mail message as facsimile data to said facsimile machine.

55. A method for transmitting and receiving facsimile image data over a computer network comprising the steps of:

emulating a public switched telephone network connection to a facsimile machine;

transmitting to or receiving from said facsimile machine over said emulated connection, image data in a facsimile transmission format;

transmitting to or receiving from a computer network over a standard public switched telephone network connection, image data attached to electronic mail format data;

converting between image data in a facsimile transmission format and image data attached to electronic mail format data; and

controlling communication of image data in a facsimile transmission format to or from said facsimile machine over said

emulated connection and image data attached to electronic mail  
format data over said standard connection.